RULE 233 BIOMASS BOILERS

Adopted 10-06-94

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100 GENERAL

101 APPLICABILITY: This rule applies to boilers and steam generators which have a potential to emit, as defined in Rule 502, NEW SOURCE REVIEW, 25 tons or more of NO_x emissions and which have a primary energy source of biomass consisting of a minimum of 75 percent of the total annual heat input.

102 FEDERAL REGULATIONS: Compliance with this rule shall not exempt a person from complying with any federal regulation promulgated pursuant to the Clean Air Act (42 U.S.C. Section 7401 et seq.).

103 EXEMPTION, BOILERS, STEAM GENERATORS, AND PROCESS HEATERS: This rule shall not apply to boilers, steam generators, and process heaters subject to Rule 231, INDUSTRIAL, INSTITUTIONAL, AND COMMERCIAL BOILERS, STEAM GENERATORS, AND PROCESS HEATERS.

104 EXEMPTION, BIOMASS SUSPENSION BOILERS: This rule shall not apply to existing boilers and steam generators subject to Rule 232, BIOMASS SUSPENSION BOILERS.

105 EXEMPTION, MUNICIPAL SOLID WASTE: This rule shall not apply to combustion units whose primary purpose is to burn municipal solid waste, as defined in Section 206.

106 EXEMPTION, WASTE HEAT RECOVERY BOILERS: The provisions of this rule do not apply to waste heat recovery boilers used to recover sensible heat from the exhaust of combustion turbines or unfired waste heat recovery boilers used to recover sensible heat from the exhaust of any combustion equipment.

200 DEFINITIONS

201 BIOMASS: Any organic material not derived from fossil fuels, such as agricultural crop residues, bark, lawn, yard and garden clippings, leaves, silvicultural residue, tree and brush pruning, wood and wood chips, and wood waste, including these materials when separated from other waste streams. Biomass does not include material containing sewage sludge, industrial sludge, medical waste, hazardous waste, or radioactive waste.

202 BIOMASS BOILER OR STEAM GENERATOR: Any combustion equipment used in any industrial, institutional, or commercial operation designed to burn biomass to produce steam, heat water or other fluids, and/or produce electricity.

203 BRITISH THERMAL UNIT (BTU): The amount of heat required to raise the temperature of one pound of water from 59 F to 60 F at one atmosphere.

204 HEAT INPUT: The chemical heat released due to fuel combustion in a boiler, using the higher heating value of the fuel. This does not include the sensible heat of incoming combustion air.

205 HIGHER HEATING VALUE (HHV): The total heat liberated per mass of fuel burned (BTU per pound), when fuel and dry air at standard conditions undergo complete combustion and all resultant products are brought to their standard states at standard conditions. HHV shall be determined by one of the following test methods:

205.1 ASTM D 2015-85 for solid fuels; or

205.2 ASTM D 240-87 or ASTM D 2382-82 for liquid hydrocarbon fuels; or

205.3 ASTM D 1826-88 or ASTM D 1945-81 in conjunction with ASTM D 3588-89 for gaseous fuels.

206 MUNICIPAL SOLID WASTE: Household, commercial/retail, and/or institutional waste. Household waste includes material discarded by single or multiple residential dwellings, hotels, motels, and other similar permanent or temporary housing establishments or facilities. Commercial/retail waste includes material discarded by stores, offices, restaurants, warehouses, non-manufacturing activities at industrial facilities, and other similar establishments or facilities. Institutional waste includes material discarded by schools, hospitals, prisons, and government facilities and other similar establishments or facilities.

207 NO_X EMISSIONS: The sum of nitric oxides and nitrogen dioxide in the flue gas, collectively expressed as nitrogen dioxide (NO_2).

208 PARTS PER MILLION BY VOLUME (PPMV): The ratio of the number of gas molecules of a given species, or group, to the number of millions of total gas molecules.

209 RATED HEAT INPUT CAPACITY: The heat input capacity, in million BTU per hour, specified on the nameplate of the combustion unit. If the combustion unit has been altered or modified such that its maximum heat input is different than the input capacity specified on the nameplate, and this alteration or modification has been approved by the Air Pollution Control Officer and made a limiting condition of operation, then the new maximum heat input shall be considered as the rated heat input capacity.

210 RESPONSIBLE OFFICIAL: An individual with the authority to certify that a source complies with all applicable requirements, including the conditions of permits issued to sources in accordance with Regulation 5, PERMITS. A "responsible official" means one of the following:

210.1 For a corporation, a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit and either:

a. The facilities employ more than 250 persons or have gross annual sales or expenditures exceeding $25 million (in second quarter 1980 dollars); or

b. The delegation of authority to such representative is approved in advance by the Air Pollution Control Officer;

210.2 For a partnership or sole proprietorship, a general partner or the proprietor, respectively; or

210.3 For a municipality, state, federal, or other public agency, either a principal executive officer or a ranking elected official; or

210.4 For an acid rain unit subject to Title IV (Acid Deposition Control) of the Clean Air Act, the "responsible official" is the designated representative of that unit for any purposes under Title IV and Rule 507, FEDERAL OPERATING PERMITS PROGRAM.

211 SHUTDOWN: The period of time a unit is cooled from its normal operating temperature to cold or ambient temperature.

212 STARTUP: The period of time a unit is heated from cold or ambient temperature to its normal operating temperature as specified by the manufacturer.

213 UNIT: Any biomass boiler or steam generator as defined in Sections 202.

214 WOOD: Wood, wood residue, bark, or any derivative fuel or residue thereof, in any form, including but not limited to sawdust, sanderdust, wood chips, scraps, slabs, millings, shavings, and processed pellets made from wood or other forest residues.

300 STANDARDS

301 LIMITATIONS:

301.1 No person shall allow the discharge of NO_x emissions into the atmosphere from a biomass boiler or steam generator in excess of the following standards, whichever is less stringent:

a. An exhaust concentration of 115 parts per million (ppmv) corrected to 12 percent by volume stack gas carbon dioxide (CO_2) on a three-hour average dry basis.

b. 50 percent of the uncontrolled NO_x emission concentration in the exhaust gas stream. A corresponding controlled concentration limit, expressed in ppmv corrected to 12 percent by volume stack gas CO_2 on a three-hour average dry basis, shall be established in a Permit to Operate for the purpose of demonstrating continuous compliance with the 50 percent emission reduction.

301.2 A person operating a biomass boiler or steam generator subject to this rule shall establish a carbon monoxide (CO) emission limitation that represents good operating and combustion practices. No person shall allow the discharge of CO into the atmosphere in excess of 120 percent of the CO exhaust concentration established by an initial compliance test conducted in accordance with Section 503. The CO concentration in ppmv shall be corrected to 12 percent by volume stack gas CO_2 on a 3-hour average dry basis.

400 ADMINISTRATIVE REQUIREMENTS

401 COMPLIANCE SCHEDULE

401.1 Any person operating a unit subject to this rule shall demonstrate full compliance with the emission limitations of Section 300 by May 31, 1995. Subject to the approval of the Air Pollution Control Officer, testing conducted in the 18 months preceding May 31, 1995, may be used to demonstrate compliance provided such testing meets the requirements of Sections 503.1 or Section 503.2, using the test methods specified in Section 504.

401.2 Any person operating a unit subject to this rule shall demonstrate compliance with the continuous emissions monitoring requirements of Section 502 in accordance with the following schedule:

a. By April 6, 1995, submit plans and specifications for the Continuous Emissions Monitoring System, including milestones for installation and certification of the proposed system.

b. By October 6, 1996, achieve full compliance with all requirements of Section 502. Full compliance shall be achieved no later than 60 days after installation of the Continuous Emissions Monitoring System.

402 OPERATION AND MAINTENANCE PLAN: Any person installing an emission control device as a means of complying with the emission limitations of Section 301 shall submit an Operation and Maintenance Plan with the application for Authority to Construct for the emission control device.

402.1 The Operation and Maintenance Plan shall specify:

a. Operation and maintenance procedures that will demonstrate continuous operation of the emission control device during emission-producing operations; and

b. Records that must be kept to document the operation and maintenance procedures.

402.2 The records must comply with Sections 501, 502, and 505.

402.3 The Operation and Maintenance Plan shall be implemented upon approval by the Air Pollution Control Officer.

402.4 Subsequent to the construction of any emission control device used for demonstrating compliance with the emission limitation of Section 301, a Operation and Maintenance Plan shall be submitted or resubmitted in conjunction with any changes in the procedures addressed in the plan, or upon the request of the Air Pollution Control Officer.

403 COMPLIANCE COSTS: A person operating a unit subject to this rule shall bear all expenses associated with compliance with the monitoring and reporting provisions of this rule.

404 CERTIFICATION: All reports submitted in accordance with this rule shall be signed by a responsible official who shall certify the truth, accuracy, and completeness of the report.

500 MONITORING AND RECORDS

501 RECORDKEEPING: A person operating a unit subject to this rule shall keep the following records for each unit:

501.1 Calendar date of record.

501.2 Number of hours the unit is operated during each day.

501.3 Boiler load.

501.4 Fuel types, including supplementary gaseous or liquid fuels.

501.5 Duration of startups and shutdowns.

501.6 Type and duration of maintenance and repairs.

501.7 Results of compliance tests.

501.8 Three-hour average NO_x emission concentration (expressed as NO_2 and corrected to 12 percent by volume stack gas CO_2).

501.9 Three-hour average CO emission concentration (corrected to 12 percent by volume stack gas CO_2).

501.10 Identification of time periods during which NO_x and CO emission limitations are exceeded, the reason for the exceedance, and a description of corrective action taken.

501.11 Identification of time periods during which operating condition and pollutant emission data were not obtained, the reason for not obtaining this information, and a description of corrective action taken.

502 CONTINUOUS EMISSIONS MONITORING

502.1 By the compliance date in Section 401.2, a person operating a unit subject to this rule shall install, calibrate, operate, and maintain a Continuous Emissions Monitoring System (CEMS) in accordance with applicable requirements of Appendices B and F of Title 40 Code of Federal Regulations Part 60 (40 CFR 60).

502.2 The CEMS shall include equipment that measures and records the following:

a. Continuous exhaust gas NO_x and CO concentrations corrected to 12 percent by volume stack gas CO_2 dry basis.

b. Average NO_x and CO concentrations calculated on a three-hour average basis.

502.3 A person operating a CEMS shall submit an excess emissions and monitoring systems performance report to the Air Pollution Control Officer within 30 days after the end of each calendar quarter in accordance with 40 CFR 60, Section 60.7(c) and (d) and Section 60.13.

502.4 The enhanced monitoring requirements of Sections 113 and 114 of the Federal Clean Air Act shall take precedence over the requirements of this Section for facilities subject to Rule 507, FEDERAL OPERATING PERMIT PROGRAM.

503 INITIAL COMPLIANCE TEST

503.1 A person who elects to comply with the limitation specified in Section 301.1.a shall conduct an initial compliance test no later than the applicable final compliance date in Section 401.1. The source test shall also be used to establish the CO limitation in accordance with Section 301.2.

a. Each emission test run shall be conducted while the unit is operated within 10% of the rated heat input capacity. No emission test shall be conducted during startup, shutdown, or under breakdown conditions for the purpose of the initial compliance test.

b. The initial compliance test shall be conducted for NO_x and CO using the test methods specified in Section 504.

503.2 A person who chooses to comply with the limitation specified in Section 301.1.b shall conduct an initial compliance test no later than the applicable final compliance date in Section 401.1. The source test shall also be used to establish the CO limitation in accordance with Section 301.2.

a. Each emission test run shall be conducted while the unit is operated within 10% of the rated heat input capacity. No emission test shall be conducted during startup, shutdown, or under breakdown conditions for the purpose of the initial compliance test.

b. The initial compliance test shall be conducted for NO_x and CO using the test methods specified in Section 504.

c. The 50 percent NO_x emission reduction specified in Section 301.1.b shall be calculated based on the pre- and post-controlled NO_x concentration corrected to 12 percent by volume stack gas CO_2. The pre-controlled concentration to be used in demonstrating the 50 percent reduction shall be obtained using the test methods specified in Section 504. The pre-controlled concentration shall be submitted to the Air Pollution Control Officer in the application for Authority to Construct specified in Section 401.2 or in a previously submitted application for Authority to Construct for an existing unit.

503.3 At least sixty (60) days prior to the initial compliance test, a written test plan detailing the test methods and procedures to be used shall be submitted for approval by the Air Pollution Control Officer. The plan shall cite the test methods to be used for the determination of compliance with the emission limitations of this rule. The plan shall provide the proposed procedures for the characterization of the representative biomass materials to be burned during testing.

504 TEST METHODS: A person conducting source tests in accordance with Section 503 shall use the following test methods:

504.1 Nitrogen Oxides (NO_X): ARB Test Method 100, Title 17, CCR, Section 94114, Procedures for Continuous Emission Stack Sampling, or EPA Test Method 7E, 40 CFR 60, Appendix A. A violation determined by any of these test methods shall constitute a violation of this rule.

504.2 Carbon Monoxide (CO): ARB Test Method 10, Title 17, CCR, Section 94109, Determination of Carbon Monoxide Emissions from Stationary Sources, or ARB Test Method 100, or EPA Test Method 10, 40 CFR 60, Appendix A. A violation determined by any of these test methods shall constitute a violation of this rule.

504.3 Carbon Dioxide (CO_2): ARB Test Method 100, Title 17, CCR, Section 94114, Procedures for Continuous Emission Stack Sampling, or EPA Test Method 3A, 40 CFR 60, Appendix A.

505 CORRECTION OF EMISSION CONCENTRATIONS: NO_x and CO concentrations may be corrected to 8 percent by volume stack gas O_2 instead of 12 percent by volume stack gas CO_2 if approved by the Air Pollution Control Officer in a Permit to Operate.

506 DURATION OF RECORDS: All records maintained pursuant to this rule shall be retained for at least two years from date of entry, with the exception that sources subject to the requirements of Rule 507, FEDERAL OPERATING PERMIT PROGRAM, shall retain records at least five years. Records shall be made available for inspection by the Air Pollution Control Officer upon request.